B.Tech Sem – VIII (2007 Course) (Chemical Engg.) : SUMMER - 2019

SUBJECT: PROCESS EQUIPMENT DESIGN

Day : Thursday
Date : 30/05/2019

Time: 02.30 PM TO 05.30 PM
Max. Marks: 80

S-2019-3255

N.B.

1) **Q.No.1**and **Q.No.5** are **COMPULSORY**. Attempt **ANY TWO** questions from each section.
2 Answer to both the sections should be written in **SAME** Answer book.
3) Figures to the right indicate **FULL** marks.
4) Assume suitable data if **NECESSARY**.
5) Use of non-programmable **CALCULATOR** is allowed.

SECTION-I

Q.1 **a)** Draw neat sketch of shell and tube H.E. and explain the design equations for the design of various components. **(05)**
b) Explain various types of blades used for agitator with their characteristics. **(05)**
c) Discuss the design procedure for internal coil reaction vessel. **(04)**

Q.2 Draw a labeled neat sketch of double pipe H.E. and explain all steps for its design. **(13)**

Q.3 How would you decide horse power of an agitator motor from its power number calculation? **(13)**

Q.4 Write notes on the following: **(13)**
i) Design of Jacketed reaction vessel
ii) Design of C.S.T.R.

SECTION-II

Q.5 **a)** Explain various steps involved in design of distillation column. **(05)**
b) Explain the significance of a reflux drum **(05)**
c) State the salient features of chem-CAD. **(04)**

Q.6 Describe with equations, design method for binary system. **(13)**

Q.7 Explain the significance of entrainment separator in gas liquid separation, consider any suitable industrial example. **(13)**

Q.8 Explain step wise design procedure for calculation of NTU and HTU concept for Tray absorption calumn. **(13)**

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